

## REMARKS

### **I. General**

Claims 1-44 were pending in the present application. Claims 1-13, 15-17, 32-37, and 39-44 are rejected in the current Office Action (mailed December 13, 2005), and claims 14, 18-31, and 38 are withdrawn from consideration. The current Office Action raises the following issues:

- Restriction Requirement mailed August 29, 2005 is maintained and made Final; and
- Claims 1-13, 15-17, 32-37, and 39-44 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,909,034 to Soldavini et al. (hereinafter “*Soldavini*”) in view of Published U.S. Patent Application No. 2005/0116013 to Kwark et al. (hereinafter “*Kwark*”) and further in view of U.S. Patent No. 5,165,590 to Cini et al. (hereinafter “*Cini*”).

In response, Applicant respectfully traverses the outstanding claim rejections, and requests reconsideration and withdrawal thereof in light of the remarks presented herein.

### **II. Restriction Requirement**

A Restriction Requirement mailed August 29, 2005 required election as between:

- I. claims 18-31, and
- II. claims 1-17 and 32-44.

The Restriction Requirement further required election between the species of Figure 1 and the species of Figure 4.

In response to such Restriction Requirement, Applicant provisionally elected claims 1-17 and 32-44 and the specie of FIGURE 1, WITH TRAVERSE. The current Office Action (mailed December 13, 2005) modifies the Restriction Requirement to group claim 14 with claims 18-31, and makes the Restriction Requirement Final (*see* page 2 of the Office Action).

### Improper Finality of Restriction Requirement

Applicant respectfully submits that the Finality of the Restriction Requirement is improper. The current Office Action modifies the restriction to group claim 14 with claims 18-38. Applicant has not been afforded a full and fair opportunity to respond to the modified Restriction Requirement, nor has Applicant been afforded an opportunity to elect one of the modified group of claims for examination. Rather, Applicant was required to elect as between (I) claims 18-31 and (II) claims 1-17 and 32-44. Applicant provisionally elected group II (claims 1-17 and 32-44), which included claim 14. The Examiner has improperly taken it upon himself in the current Office Action to remove from consideration claim 14 without affording Applicant an opportunity to respond to the modified restriction or to elect from the modified group of claims, which now appear to be grouped as (I) claims 14 and 18-31 and (II) claims 1-13, 15-17, and 32-44. No reasoning for the new grouping of claims is provided except “that claim 38 should be grouped together with claim 14” (*see* page 2 of the Office Action). Such concession by the Examiner necessarily means that the original restriction as between claims (I) claims 18-31 and (II) claims 1-17 and 32-44 was improper, and thus the requirement should not now be made Final.

### Both the Original and Modified Restriction Requirements are Improper

Applicant maintains that the original Restriction Requirement raised in the August 29, 2005 Office Action is improper for the reasons set forth in Applicant’s response of September 29, 2005. Further, Applicant maintains that the modified Restriction Requirement presented in the current Office Action is likewise improper. In addition, the modified grouping presented in the current Office Action groups claim 14, which is directed to the “integrated circuit of claim 12” with claims 18-31, which the Restriction Requirement of August 29, 2005 asserts are directed to a process of making a device. Claim 14 is clearly not directed to a process, as with claims 18-31, and therefore Applicant asserts that this modified restriction is nonsensical and should be withdrawn. Thus, pursuant to 37 C.F.R. § 1.144, Applicant has petitioned the Director to reconsider and withdraw both the original Restriction Requirement raised in the Office Action mailed September 29, 2005, as well as the modified Restriction Requirement raised in the current Office Action.

### Improper Interpretation of Claim 18

The Office Action asserts that “claim 18 clearly requires the first carrier to be coupled to the common interface before the second carrier is coupled to the common interface”. Page 2 of the Office Action. Applicant strenuously disagrees, and submits that the Examiner has incorrectly interpreted the clear language of claim 18. Claim 18 recites:

A method comprising:

coupling a first carrier from an internal resonant frequency circuitry of an integrated circuit to an electrically common interface of the integrated circuit’s package, wherein said first carrier is arranged to carry signals of a first polarity;

coupling a second carrier from said internal resonant frequency circuitry of said integrated circuit to said electrically common interface of the integrated circuit’s package, wherein said second carrier is arranged to carry signals of a polarity opposite said first polarity; and

coupling a third carrier from said internal resonant frequency circuitry of said integrated circuit to said electrically common interface of the integrated circuit’s package, wherein said third carrier is arranged to carry signals of said first polarity.

While three coupling steps are recited, no order in which the coupling steps are to be performed is recited. For instance, claim 18 clearly reads on any method that performs the three coupling steps, irrespective of the order in which the three coupling steps are performed. For example, the claim encompasses a method in which the recited third carrier is first coupled, then the second carrier, and then the first carrier. While the coupling of the first carrier is the first recited element of the claim, the claim does not recite that the coupling of the first carrier is necessarily performed before the performance of the later recited coupling steps. For instance, the claim does not recite any indication of an order of the coupling steps, such as “first,” “next,” etc., and thus the Examiner’s assertion that claim 18 clearly requires the first carrier to be coupled to the common interface before the second carrier is coupled to the common interface is completely incorrect.

Applicant respectfully reminds the Examiner that “During patent examination, the pending claims must be ‘given their broadest reasonable interpretation consistent with the specification.’” M.P.E.P. §2111, *quoting In re Hyatt*, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Thus, because the method of claim 18 does not recite any order of the elements, it should not be interpreted as requiring any particular order in the performance of the elements.

### III. Claim Rejections Under 35 U.S.C. § 103

Claims 1-13, 15-17, 32-37, and 39-44 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Soldavini* in view of *Kwark* and further in view of *Cini*. Applicant respectfully traverses this rejection as provided below.

First, the rejection of claims 1-11, 15-17, 32-36, 39, 40, 42, and 43 is unclear. The Office Action asserts that claims 1-11, 15-17, 32-36, 39, 40, 42, and 43 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Soldavini* in view of *Kwark* and further in view of *Cini*. However, in explaining the rejection of these claim, the Office Action makes no mention of *Cini*, see pages 2-4 of the Office Action. *Cini* is only mentioned with regard to claims 12, 13, 41, 37, and 44, see page 4 of the Office Action. Thus, it is unclear to what degree, if any, *Cini* is actually being relied upon in the rejection of claims 1-11, 15-17, 32-36, 39, 40, 42, and 43. Accordingly, a prima facie case of obviousness has not been properly established as to these claims because the Office Action does not explain the application of *Cini*.

“Patent examiners carry the responsibility of making sure that the standard of patentability enunciated by the Supreme Court and by the Congress is applied in each and every case.” M.P.E.P. § 2141 (emphasis in original). Further, “[o]ffice policy is to follow *Graham v. John Deere Co.* in the consideration and determination of obviousness under 35 U.S.C. 103.” M.P.E.P. § 2141. In *Graham v. John Deere Co.*, 383 U.S. 1 (1966) the Supreme Court set forth the factual inquiries which must be considered in applying the statutory test for determining whether a claim is obvious under 35 U.S.C. §103(a) as follows: (1) determining of the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; and (3) resolving the level of ordinary skill in the pertinent art. Moreover, M.P.E.P. § 706.02(j) directs the Examiner to set forth in the Office action: (1) the relevant teachings of the prior art relied upon; (2) the difference or differences in the claim over the applied references; (3) the proposed modification of the applied references necessary to arrive at the claimed subject matter; and (4) an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification.

In the present Office Action, claims 1-11, 15-17, 32-36, 39, 40, 42, and 43 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Soldavini* in view of *Kwark* and *Cini*. However, in explaining the rejection of these claims, the Office Action makes no mention of *Cini*. Thus, the Office Action has failed to satisfy the above requirements for establishing a prima facie case of obviousness. For instance, the Office Action does not detail the relevant teachings of *Cini* that are relied upon in the rejection of claims 1-11, 15-17, 32-36, 39, 40, 42, and 43, nor does the Office Action provide an explanation of why one of ordinary skill in the art at the time the invention was made would have been motivated to combine *Cini*'s teaching with that of *Soldavini* and *Kwark* as to these claims.

Therefore, if the rejection of claims 1-11, 15-17, 32-36, 39, 40, 42, and 43 is maintained, the application of *Cini* should be explained in a non-final Office Action to afford Applicant a full and fair opportunity to respond to such rejection. Otherwise, if the rejection of claims 1-11, 15-17, 32-36, 39, 40, 42, and 43 is based only on the combination of *Soldavini* in view of *Kwark*, this should be clearly stated in a non-final Office Action.

Of course, as explained below, Applicant believes that the rejection should be withdrawn because the applied references fail to teach or suggest all elements of the claims and insufficient motivation exists for combining the references in the manner applied.

To establish a prima facie case of obviousness, three basic criteria must be met. *See* M.P.E.P. § 2143. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the combination of references must teach or suggest all the claim limitations. Without conceding any other criteria, Applicant respectfully asserts that the combination of references fails to teach or suggest all the limitations of claims 1-13, 15-17, 32-37, and 39-44, and insufficient motivation exists for combining the references in the manner applied by the Office Action, as discussed further below.

Independent Claim 1

Independent claim 1 recites:

An integrated circuit comprising:  
internal circuitry;  
package having at least two pins;  
a first carrier communicatively coupling said internal circuitry with a first one of said at least two pins, wherein said first carrier carries a signal of a first polarity;  
a second carrier communicatively coupling said internal circuitry with said first one of said at least two pins, wherein said second carrier carries a signal of a polarity opposite said first polarity;  
a third carrier communicatively coupling said internal circuitry with a second one of said at least two pins, wherein said third carrier carries a signal of said first polarity; and  
a fourth carrier communicatively coupling said internal circuitry with said second one of said at least two pins, wherein said fourth carrier carries a signal of a polarity opposite said first polarity.

As discussed below, the applied references fail to teach or suggest all elements of claim 1, and insufficient motivation exists to combine the references in the manner applied by the Office Action.

The Office Action relies upon *Soldavini* as teaching the recited first and second carriers that are communicatively coupled to a first of at least two pins (citing carriers 44a and 44b coupled with pin 27 in figure 3 of *Soldavini*), as well as teaching the recited third and fourth carriers that are communicatively coupled to a second of at least two pins (citing carriers 44a and 44b coupled with pin 30 in figure 3 of *Soldavini*), see page 3 of the Office Action. The Office Action concedes that *Soldavini* fails to teach that the first and second carriers have opposite polarity, as well as fails to teach that the third and fourth carriers have opposite polarity. However, the Office Action asserts that *Kwark* teaches that coupling of carriers having opposite polarity reduces the effective impedance, and thus concludes that it would have been obvious to have carriers or bonding wires coupling to a pin having opposite polarity in the device of *Soldavini* to achieve the benefit of reducing the effective impedance. Applicant respectfully disagrees as discussed below.

As discussed further below, *Soldavini* provides a device in which a common signal is carried from a node to a pin. The signal is carried from the node to the pin using two parallel

wires in order to reduce resistivity. This is analogous to implementing a highway having two lanes for traffic flowing in one direction so as to reduce the “resistivity” along the highway in such direction. Thus, in all cases in *Soldavini* the two wires coupled to a common pin carry signals having the same polarity. Of course, the signals carried to one pin and the signals carried to a different pin may have opposite polarities. For instance, the signals carried to pins 27 and 28 may have opposite polarity, but the signals carried by the two wires 44a and 44b coupled to a common pin (e.g., pin 27 or pin 28) each have the same polarity.

While *Kwark* mentions that adjacent bonding wires may carry signals of opposite polarity to take advantage of the mutual inductive and capacitive coupling between such adjacent wires, *Kwark* does not teach or suggest that the adjacent bonding wires carrying signals of opposite polarity would be coupled to a common pin. As mentioned above, the two wires that are coupled to a common pin in *Soldavini* do not have opposite polarity, but are instead a signal from a node split in parallel. The signal is split in parallel in *Soldavini* to reduce resistivity (e.g., make a two-lane highway with traffic flowing in the same direction). One would not be motivated to modify *Soldavini* to make the signals carried by two wires coupled to a common pin have opposite polarity, as this would defeat the purpose of having the two wires in the first place. For instance, this would be analogous to changing the two-line highway having traffic flowing in the same direction, to a two-lane highway with each lane having traffic flowing in opposite directions, which would increase the resistivity of each lane of traffic.

If one were motivated to combine the teaching of *Kwark* with that of *Soldavini* at all, one would not make the adjacent wires coupled with a common pin in *Soldavini* (i.e. wires 44a, 44b) of opposite polarity (as this would defeat the very purpose of having the two wires 44a, 44b in *Soldavini*), but would instead make the couplings to adjacent pins of different polarity. For instance, the pins 27 and 28 of *Soldavini* could be arranged adjacent to each other, and the signals carried by wires 44a, 44b to pin 27 could have a different polarity than the signals carried by wires 44a, 44b to pin 28. If one were motivated to combine the teaching of *Kwark* to the device of *Soldavini* at all, Applicant submits that this is how such teaching would be applied, rather than as applied by the Office Action, which asserts that one would be motivated to make the wires 44a, 44b coupled to a common pin of opposite polarity. Again, making the wires 44a, 44b that are coupled to a common pin in *Soldavini*

have opposite polarity would drastically change the principle of operation of *Soldavini* and would defeat the very purpose of implementing the two wires in the first place.

In view of the above, Applicant respectfully submits that claim 1 is not obvious over the teachings of *Soldavini* and *Kwark* because the combined teachings fail to teach or suggest all elements of claim 1 (i.e., no teaching or suggestion is provided for having carriers that are coupled to a common pin carry signals of opposite polarity), and because one of ordinary skill in the art would not be motivated to combine the teachings of *Kwark* with *Soldavini* in the manner applied by the Office Action. For the convenience of the Examiner, the teachings of *Soldavini* and *Kwark* are described further below.

*Soldavini* teaches, in connection with figure 3, a device 15 having an output bridge 16 that comprises four MOS transistors 17, 18, 19, and 20 connected to form four nodes 22, 23, 24, and 25, of which, typically, nodes 22 and 23 are connected to the power supply and ground, respectively, while nodes 24 and 25 form the output of the bridge. Column 3, lines 53-61 of *Soldavini*. The nodes 22-25 are all connected external to device 15 by respective pins 27-30 via two-wire connections used to ensure low resistivity and a high current carrying capacity. Column 3, lines 62-64 of *Soldavini*. The output pads connected to nodes 22-25 are split to form four pairs of output pads 31a, 31b, 32a, 32b, 33a, 33b, and 34a, 34b, directly coupled to nodes 22, 23, 24, and 25 by four pairs of connecting lines. Column 3, line 66 – column 4, line 13 of *Soldavini*. Each of such output pads is connected to its respective pin by a wire 44a, 44b.

Thus, in *Soldavini*, a common node (signal) is coupled in parallel to a pin via two wires 44a, 44b. For instance, node 22 is typically connected to power, and thus the wires 44a, 44b connecting node 22 to pin 27 carry a common signal in parallel (i.e., the signal of node 22). Therefore, the wires 44a, 44b connecting to pin 27 necessarily have the same polarity. Similarly, node 23 is typically connected to ground, and thus the wires 44a, 44b connecting node 23 to pin 28 carry a common signal in parallel (i.e., the ground signal of node 23). Therefore, the wires 44a, 44b connecting to pin 28 necessarily have the same polarity.



Likewise, the wires 44a, 44b coupling node 25 to pin 30 necessarily have the same polarity. For instance, *Soldavini* teaches that the connection between node 25 and output pads 34a, 34b includes a split portion 40a, 40b and a common portion 40c. Column 4, lines 11-13 of *Soldavini*. As shown in figure 3 of *Soldavini*, the split portion 40a, 40b carry a common signal in parallel (i.e., the output of node 25), and therefore the wires 44a, 44b connecting to pin 30 necessarily have the same polarity.

Thus, while *Soldavini* teaches two carriers coupled to a first pin, it fails to teach that the two carriers have opposite polarity. Instead, the very operation of the arrangement taught by *Soldavini* necessitates that the two carriers coupled to a common pin each have the same polarity. The very purpose of the two wires 44a, 44b coupled to a common pin is to reduce resistivity by carrying signals having a common polarity from a common node to a common pin. Modifying the wires 44a, 44b to have opposite polarity would drastically change the principle of operation of *Soldavini* and defeat the very purpose of having the two wires 44a, 44b in the first place (i.e., to reduce resistivity).

*Kwark* mentions in paragraph 0046 thereof: “The present invention can also be extended to take advantage of the mutual inductive and capacitive coupling between adjacent bonding wires which are carrying differential signals (i.e., signals of opposite polarity).” However, while *Kwark* mentions that adjacent bonding wires may carry signals of opposite polarity, *Kwark* does not teach or suggest that such adjacent bonding wires carrying signals of opposite polarity would be coupled to a common pin.

Thus, neither *Kwark* nor *Soldavini* teach or suggest two carriers coupled to a common pin that carry signals of opposite polarity. Further, as described above, one of ordinary skill in the art would not be motivated to alter *Soldavini* so as to make the two wires 44a, 44b that are coupled to a common pin carry signals of opposite polarity, as this would drastically change the principle of operation of *Soldavini* and defeat the very purpose for which *Soldavini* implements the two wires 44a, 44b. Rather, as mentioned above, Applicant submits that if one were motivated to combine the teaching of *Kwark* with that of *Soldavini* at all, one would not make the adjacent wires coupled with a common pin in *Soldavini* (i.e. wires 44a, 44b) of opposite polarity (as this would defeat the very purpose of having the two wires 44a, 44b in *Soldavini*), but would instead make the couplings to adjacent pins of

different polarity. For instance, the pins 27 and 28 of *Soldavini* could be arranged adjacent to each other, and the signals carried by wires 44a, 44b to pin 27 could have a different polarity than the signals carried by wires 44a, 44b to pin 28.

In view of the above, Applicant respectfully submits that independent claim 1 is not obvious under 35 U.S.C. §103(a) over *Soldavini* and *Kwark*. Further, *Cini* is not relied upon for curing the above-identified deficiencies of *Soldavini* and *Kwark*, nor does it do so.

### Independent Claim 32

Independent claim 32 recites:

A system comprising:  
resonant tank circuitry implemented in a package that provides a plurality of interface means that are electrically coupled together;  
first coupling means for communicatively coupling said resonant tank circuitry to one of said plurality of interface means, wherein said first coupling means carries a signal of a first polarity; and  
second coupling means for communicatively coupling said resonant tank circuitry to one of said plurality of interface means, wherein said second coupling means carries a signal of polarity opposite said first polarity.

Neither *Soldavini* nor *Kwark* teach or suggest a resonant tank circuitry that is implemented in a package that provides a plurality of interface means that are electrically coupled together. The Office Action acknowledges that *Soldavini* fails to teach that its internal circuitry includes resonant tank circuitry, *see* page 4 of the Office Action. However, the Office Action asserts that it would have been obvious “to include internal circuitry includes ... resonant tank in the internal circuitry of *Soldavini* et al. because that would produce a system having reduced impedance.” Page 4 of the Office Action. The Office Action fails to explain how implementing such a resonant tank in *Soldavini* would indeed reduce impedance. Further, neither *Soldavini* nor *Kwark* teach or suggest such use of a resonant tank for reducing impedance. Rather, *Kwark* merely mentions that adjacent bonding wires carrying differential signals may lower the effective impedance, but makes no mention of using a resonant tank for reducing impedance. Thus, Applicant submits that the Office Action fails to establish any teaching of a resonant tank, and particularly no teaching or suggestion of using a resonant tank for reducing impedance that would motivate one of ordinary skill in the art to employ a resonant tank for the purpose stated by the Office Action.

Further, even if the circuitry 16 in *Soldavini* comprises resonant tank circuitry, a plurality of interface means to the package (e.g., pins 27-30) are not electrically coupled together. Rather, the pins 27-30 of *Soldavini* are shown as electrically isolated from each other, rather than being electrically coupled together. Similarly, *Kwark* fails to teach or suggest a plurality of interface means to a package that are electrically coupled together.

Thus, Applicant respectfully submits that independent claim 32 is not obvious under 35 U.S.C. §103(a) over *Soldavini* and *Kwark*. Further, *Cini* is not relied upon for curing the above-identified deficiencies of *Soldavini* and *Kwark*, nor does it do so.

#### Independent Claim 39

Independent claim 39 recites:

A system comprising:  
internal circuitry implemented in a package that provides a plurality of pins;

a first plurality of carriers communicatively coupling said internal circuitry to a first one of said plurality of pins, wherein said first plurality of carriers are used as inductors for said internal circuitry, and wherein at least one of said first plurality of carriers carries a signal of a first polarity and at least one other of said first plurality of carriers carries a signal of polarity opposite said first polarity;

a second plurality of carriers communicatively coupling said internal circuitry to a neighboring pin of said first one of said plurality of pins, wherein said second plurality of carriers are used as inductors for said internal circuitry, and wherein at least one of said second plurality of carriers carries a signal of said first polarity and at least one other of said second plurality of carriers carries a signal of polarity opposite said first polarity; and

said first plurality of carriers and said second plurality of carriers arranged to interleave the polarities of signals carried thereby.

The combination of *Soldavini* and *Kwark* fails to teach or suggest all elements of claim 39. As discussed above with claim 1, the combined teachings of *Soldavini* and *Kwark* fail to teach or suggest a plurality of carriers that are coupled to a common pin which carry signals of opposite polarity. As further discussed above with claim 1, one of ordinary skill in the art would not be motivated to combine the teachings of *Kwark* with *Soldavini* in the manner applied by the Office Action.

In view of the above, Applicant respectfully submits that independent claim 39 is not obvious under 35 U.S.C. §103(a) over *Soldavini* and *Kwark*. Further, *Cini* is not relied upon for curing the above-identified deficiencies of *Soldavini* and *Kwark*, nor does it do so.

#### Dependent Claims

Each of dependent claims 2-13, 15-17, 33-37, and 40-44 depends, either directly or indirectly, from one of independent claims 1, 32, and 39 (and thus inherits all limitations of its respective independent claim). In view of the above, Applicant respectfully submits that independent claims 1, 32, and 39 are of patentable merit. It is respectfully submitted that dependent claims 2-13, 15-17, 33-37, and 40-44 are allowable at least because of their dependency from their respective independent claims for the reasons discussed above.

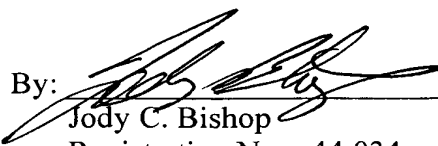
#### **IV. Conclusion**

In view of the above, Applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge Deposit Account No. 06-2380, under Order No. 49581/P042US/10315832 from which the undersigned is authorized to draw.

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Respectfully submitted,

By:   
Jody C. Bishop  
Registration No.: 44,034  
FULBRIGHT & JAWORSKI L.L.P.  
2200 Ross Avenue, Suite 2800  
Dallas, Texas 75201-2784  
(214) 855-8007  
(214) 855-8200 (Fax)  
Attorney for Applicant